



Driving Down Carrier OpEx in an Increasingly Competitive Environment

Gene Beall
Senior Vice President, Strategy and Services

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gene@mobilite.com

Gene spent 13 years with McCaw Cellular Communications Inc./AT&T Wireless in various senior leadership roles in network engineering and operations. Prior to joining Mobilite, Gene was Head of Services for the U.S. Subregion at Nokia Siemens Networks. With more than 20 years in the telecom industry, Gene has extensive leadership experience with major wireless carriers and equipment vendors. He has managed the build-out of thousands of cell sites and deployed next-generation technologies to thousands more. He has led the development and deployment of enterprise network management systems; managed a portfolio of thousands of network and office properties; led teams to create technical standards, processes, training and documentation; and managed large capital and expense budgets. Gene holds a Bachelor of Science degree from Oregon State University and a Masters degree from the University of Washington.

Shrewd wireless operators must manage their existing network assets intelligently in order to thrive in today's challenging economy even as they build next-generation networks that will enable them to realize new revenue opportunities.

In North America, wireless carriers will need to spend an estimated \$25 billion during the next four years to improve and expand their existing wireless infrastructure, regardless of whether they use CDMA- or GSM- and HSPA-based protocols. In addition, the top four U.S. wireless carriers are expected to need at least \$3.5 billion just to begin building out 4G networks based on WiMAX and Long Term Evolution (LTE) technologies.

Operators can fund their investments in two ways: internally, from their own operations and balance sheets, and using external resources. Investment capital is still available to help build these networks, but smart carriers will also look at internal operations to help fund next-generation buildouts.

As such, driving down operational expenses (OpEx) is critical in any budgeting process. Carriers need a committed, well-communicated and nationally executed plan to get desired results.

Cell-site operations account for much of a carrier's OpEx budget. These expenses can generally be classified into three major categories:

- **Leases and rents** for radio towers and base-station equipment account for nearly 50% of a wireless carrier's operating costs.
- **Backhaul** (via copper, fiber or microwave) accounts for about 30% of operating costs.
- **Operations and maintenance** (e.g., repairs, software upgrades) make up the balance.

Aggressive management of these three key areas of a carrier's OpEx budget will be imperative to the success of the next generation of wireless infrastructure.

Leases and Rents

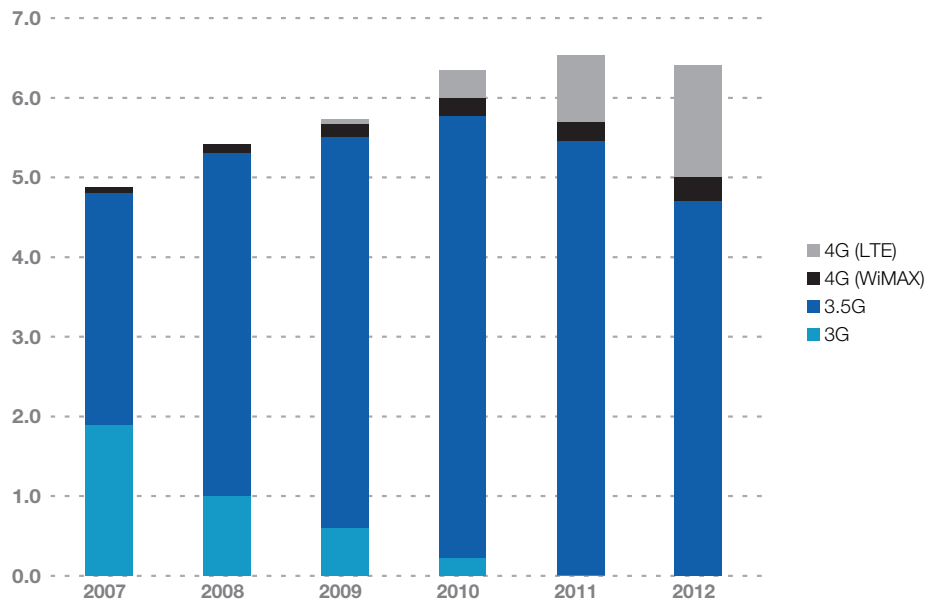
The nation's four largest wireless operators each have network assets on an average of 50,000 towers. Almost every one of these sites sits on a leasehold estate, i.e., a tower collocation, a rooftop, or a parcel of ground.

Mobilite \mō-bil-i-tee\ *verb*

1: the quality of being mobile **2:** the fastest growing tower company in the United States **3:** 50% revenue share and no equipment limits **4:** \$500 million on hand to invest in towers, DAS, and broadband backhaul networks

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Carrier infrastructure CapEx (\$B)



Monthly lease rates range from several hundred dollars to thousands of dollars per site.

Assuming the average lease cost per site is \$2,000 per month, carriers are collectively paying more than \$400 million a month — a staggering \$5 billion per year — in leases and rents. Moreover, these costs are escalating each year because most tower companies have incremental increases built into their contracts with carriers. Further, operators are charged significantly for changes to the site, such as adding or moving the cellular equipment, antennas or coax lines. Nevertheless, carriers are forced to make these adjustments as they gain customers and their networks evolve. Over the next five years, U.S. wireless carriers will pay nearly \$30 billion in cell-site rental expense.

- One simple but impactful tactic to reduce lease costs is to execute the termination provision on a site that has been “land banked,” that is a site that is no longer useful to the carrier. Each carrier most likely is paying rent on sites it does not occupy and doesn't ever plan to use. Operators should periodically review and assess their tower portfolios to identify such sites and eliminate the rent expense associated with them.
- Another tactic, particularly with ground leases, is a lease buyout or prepay program. Under these programs, the landlord accepts a one-time, lump-sum payment rather than the recurring rental expense under the original lease. Such negotiations often open the door to simultaneously extend the term of the lease, remove landlord-consent and revenue-share provisions and eliminate other landlord-friendly terms of the original lease. A caveat here: any lease buyout or prepay program requires significant capital upfront. As such, these programs will compete with other capital-expense projects the company is funding.
- Wireless carriers may be able to leverage their existing lease terms by searching for new site options. When lease rates (often urban rooftop leases) are egregiously high, several thousand dollars or more per month, a legitimate business case to move a site to a neighboring rooftop can be developed. If the business case can be supported by design, cost analysis and competitive negotiations, the incumbent landlord often will acquiesce to more competitive rates and terms. As with lease buyouts, this negotiation tactic requires a committed source of capital to support the analysis and execution. Also, it is important that strict controls are implemented to protect the relationship with the existing landlord.

- In dense urban environments where site lease rates are growing out of control, carriers can consider alternate deployment technologies such as Distributed Antenna Systems (DAS) and picocells. The economics don't work in all situations, but these alternative approaches sometimes can provide an architecture that can scale more efficiently as capacity demands increase.

Backhaul

Today cell-site backhaul is predominantly provided via copper-based T1 infrastructure supplied by Local Exchange Carriers (LECs). The monthly recurring charge associated with T1 infrastructure varies widely by market, from \$150 per circuit in highly competitive markets, to more than \$750 per circuit in some rural areas. If we assume a national average monthly recurring cost of \$300 per T1 line, and an average of 2.5 T1s per cell site, U.S. carriers are incurring about \$165 million in last-mile transport costs each month – almost \$2 billion each year. And it keeps increasing.

Migrating from copper-based T1 backhaul to ATM-structured fiber or microwave-based backhaul can reduce the cost per Megabits per second (Mbps) dramatically, particularly as customers consume more content, which requires higher-speed transmissions.

Because data rates on HSPA- and CDMA2000 Rev. A-based networks regularly exceed the 1.5 Mbps bandwidth of one T1 line, delivering high-speed data over copper can quickly become expensive. In fact, it will be prohibitively expensive to use copper-based backhaul on 4G networks. Fiber and microwave do not have this limitation. In the early stages of deploying a 3G or 4G network, a carrier may try to leverage existing copper plant, but will soon be forced to deploy higher bandwidth technologies like microwave and fiber, and will see a long-term OpEx benefit from that decision.

Operations and Maintenance

Field Operations and Maintenance are a big part of a carrier's recurring operating expense. As such, it's a prime place to search for opportunities to drive down OpEx.

- Some carriers are discovering it may be more efficient to outsource operations and maintenance to third-party vendors that specialize in specific areas. Cell-site equipment is becoming more modular and "plug-and-play." With built-in redundancy and self-diagnosis, it is becoming easier to repair – or more commonly to swap out – damaged equipment for a new unit. Many maintenance and repair functions are no longer considered a core function of the carrier, and no longer a differentiator in the marketplace. Relieving this fixed overhead cost in favor of a third-party provider that is able to leverage its field force across multiple carriers is inherently more efficient and likely to be the wave of the future. Thus, employing a neutral third-party could lead to significant efficiencies. The most important issue with operations and maintenance is to have a site fully functioning again as quickly as possible; who performs the work is secondary.
- Carriers must also use best-in-class tools and processes to drive down OpEx. Too often, operators use outdated systems that are poorly designed and difficult to use, or that aren't properly integrated into other systems. These obstacles can force the carrier to spend more money on labor-intensive data management and audit resources. Carriers must also rigorously define best-in-class processes, properly execute them throughout the network, and – equally important – continuously measure them to ensure they are used effectively.
- Operators also should consider having a central distribution point of spare inventory, like switch, backhaul, base-station and tower equipment so they can reduce their spare-parts inventory. Indeed, with a corporate supply-chain initiative, vendors may be willing to reduce prices and delivery times, increase warranty periods and/or maintain more local inventories. In addition, a corporate-wide approach can help carriers better track inventory, replenish parts and manage warranties, as well as analyze which products are not performing consistently.

Other Key Initiatives

- As networks become less of a differentiator, carriers should consider new partnerships throughout the ecosystem. Sharing infrastructure, including towers and backhaul, is a pragmatic way to reduce expenses. Switching centers (especially as the technology migrates to all-IP), location-based call processing and government-mandated services like E-911 compliance are other opportunities to share expenses, reducing both CapEx and OpEx.
- In areas where a carrier's subscribers are forced to roam on a competitor's network, carriers should consider building out their own network. Roaming charges used to be passed on to the subscriber, but with bulk-minute plans, carriers are unintentionally funding their competitors by paying roaming fees. Sharing infrastructure is one solution to this dilemma. If that's not possible, a carrier should identify areas where it can profitably build its own network.

Summary

While none of these solutions is a silver bullet by itself, carriers should critically assess their current operations, identify real opportunities and pursue multiple avenues simultaneously, keeping open to new ways of doing business. Further, operators must carefully define and decisively launch the necessary programs to remain competitive. They must effectively communicate the vision and provide the leadership to ensure appropriate energy and focus. Finally, they must vigorously support and oversee and support the execution to ensure that maximum reductions to operating expenses are achieved.